

Original Article

Women's Health Among the Chumash**James D. Adams Jr¹ and Cecilia Garcia²**¹University of Southern California, School of Pharmacy, 1985 Zonal Avenue, PSC 508, Los Angeles, CA 90089-9121, USA and ²Ensenada, Mexico

Plants were, and still are, widely used for a number of conditions affecting women in California. This article discusses traditional remedies of the Chumash for dysmenorrhea, premenstrual syndrome, feminine hygiene, heavy menstruation, urinary tract infections, parturition, lactation, infant care, menopause, sexually transmitted diseases, fertility, contraception and abortions. Many plants are presented including *Artemisia douglasiana*, *Paeonia californica*, *Trichostema lanatum*, *Salvia apiana*, *Ephedra viridis*, *Leymus condensatus*, *Vitis californica*, *Eschscholzia californica*, *Rosa californica*, *Scirpus acutus*, *Anemopsis californica* and *Phoradendron macrophyllum*. By providing the specific uses of plants for specific diseases and discussing chemistry, efficacy and safety concerns for each plant, we hope that this article gives direction to women seeking to use plants in their health care.

Keywords: *Artemisia douglasiana* – childbirth – dysmenorrhea – menopause

Introduction

Women were the basis of village life. They kept the village going by giving birth, caring for children, gathering and processing acorns, prickly pear cactus fruits and other plant foods, and many other activities. They were responsible for the health of their families and cared for and nurtured their children, husbands, parents and relatives. Their role was to help comfort their families, which is vital to healing and normal health and they also had to know how to keep themselves healthy. They possessed knowledge of many plant medicines, healing techniques and therapeutic procedures. Of course, healers ('antap, pronounced gontop) were available to help keep women healthy in the Chumash village. (Recording 1: 'The Willow Song', a song important to Chumash women. This can be found as supplementary data at eCAM online. All photographs are by James Adams as is his voice for the 'Willow Song'.)

The first menses was a special time in a girl's life. She was put into seclusion and was considered vulnerable to self injury, especially from scratching herself (1). From then on, certain

boundaries were placed on the menstruating woman. She was restricted to a menstruation hut, could not eat meat or grease and could not drink cold water for three days (1). These restrictions were intended to promote the health of the woman and her entire family.

Mugwort and Other Plant Remedies for Dysmenorrhea and Premenstrual Syndrome

Mugwort (*Artemisia douglasiana*) was, and still is, used to treat premenstrual syndrome and dysmenorrhea (2) (Fig. 1). A length of the stem equal to the length of the middle finger is cut into small pieces and added to very hot water. The tea has a pleasant flavor, especially if sweetened with a little sugar and should be used for a few days to relieve premenstrual syndrome. Dysmenorrhea is treated by chewing mugwort seeds (2). The seeds have a very strong, bitter sage flavor. Fortunately, it is usually only necessary for the woman to chew the seeds once or twice to relieve the pain of dysmenorrhea. Mugwort contains several monoterpenes such as cineole, camphor, linalool, isothujone and thujone (3). It also contains sesquiterpene lactones such as vulgarin and psilostachyin (3), which are similar to the bitter absinthin found in absinthe (from *Artemisia absinthium*). The plant contains several pain

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Figure 1. *Artemisia douglasiana* used in menopause, dysmenorrhea and for sleep.

relieving compounds including isothujone (4), linalool (5) and cineole (6). These compounds may also relieve premenstrual syndrome. However, the presence of thujone in the plant makes long-term use of concentrated alcoholic extracts of the plant a concern. Thujone is addictive and causes seizures, such as those induced by the thujone-containing drink, absinthe, used by Vincent Van Gogh. Aqueous extracts of mugwort contain little thujone and are probably safe to use (3).

Another Chumash remedy for menstrual cramps is *Paeonia californica* (7) (Fig. 2). The root was boiled to produce a tea. Paeony contains paeonol glycosides, monoterpenes, acetophenones, triterpenoids, polysaccharides and many other agents as recently reviewed (2). Paeonolide is a monoterpene found in paeonies that is anti-inflammatory by inhibiting the effects of the potent inflammatory agent, platelet activating factor (8,9). This anti-inflammatory effect may be useful against menstrual cramps. *Ephedra californica* or *Ephedra viridis* tea may have been used to treat dysmenorrhea by some California Indians (10). These *Ephedra* plants contain pseudoephedrine, not ephedrine, but can increase blood pressure and urination (2). This would be useful in decreasing edema that may form during dysmenorrhea. *Purshia tridentata* tea made from the inner bark and leaves, *Malosma laurina* leaf tea, *Rubus ursinus* root tea and *Umbellularia californica* leaf decoction were also used to ease menstrual cramps (10). Irregular menstruation was treated with *Eriogonum fasciculatum* (11). *Purshia tridentata* contains triterpenes known as cucurbitacins (12) and a cyanogenic glycoside, purshianin (13). Cucurbitacins are anti-inflammatory agents (14) that may be useful against menstrual cramps, and can be toxic in large doses (2). However, the cyanogenic glycoside would make boiling the tea a necessity to evaporate the cyanide. Although nothing is known about the chemistry of *M. laurina*, formerly *Rhus laurina*, *Rhus semialata* contains 6-pentadecylsalicylic acid (15) that may be anti-inflammatory like other salicylates. Perhaps *M. laurina* contains similar salicylates. *Rubus ursinus* fruit (also called olallie berry or marionberry) is known to contain several anthocyanins,



Figure 2. *Paeonia californica* used in dysmenorrhea.

procyanidins, ellagic acid (16) and phenolics such as beta-sitosterol and stigmasta-5,22-dien-3-ol (17). Nothing is reported about the compounds found in the roots of the plant. A related plant, *Rubus imperialis*, contains a triterpene called niga-ichigoside F1 that is antinociceptive (18). Perhaps *R. ursinus* contains similar pain relieving compounds. *Umbellularia californica* is known to contain several pain relieving compounds such as cineole (2,6) that may be helpful against menstrual cramps. The chemistry of *E. fasciculatum* has not been reported. However, other *Eriogonum* plants contain gossypetin and similar flavonoids (19) that may be useful against menstrual pain.

The Leaves of Woolly Bluecurls for Feminine Hygiene and Sage for Menorrhagia

Menstruating women were restricted to the menstrual hut, which limited their contact with other people. Bathing was a daily requirement among the Chumash (1) who were encouraged to bathe before the sun rose every day. However, menstruating women would not bathe or wash their hair (1). Cleanliness was important. Douches were used and were made from the leaves and stems of *Trichostema lanatum* (7) (Fig. 3), also called woolly bluecurls. The leaves of woolly bluecurls have a pleasant smell, similar to rosemary.

Other California Indians (Washo) made feminine napkins from the inner bark of *Juniperus* sp. (10). Cahuilla women drank a tea of *Nicotiana attenuata* leaves during menstruation to prevent body odors (10). They used the leaves of *Solidago californica* (California goldenrod) to make a douche for feminine hygiene (10).

Chumash women used sage to stop heavy menstruation, also called hypermenorrhea or menorrhagia (1). The species of sage is not recorded but could have been *Salvia apiana*, white sage. White sage has been extensively discussed before (20) and was probably used as a tea. Other plants may have been added to this sage. Desert Indians used *Hyptis emoryi* (desert lavender) to control heavy menstruation (10). This may have involved boiling the leaves and flowers to make a tea. Heavy



Figure 3. *Trichostema lanatum* used in feminine hygiene.

menstruation appears to involve inadequate blood clotting and damage to the uterine endometrium. This condition is commonly controlled with birth control pills, which to some degree help limit bleeding during menstruation. It is not known which compounds in white sage or desert lavender may help control this condition. However, both white sage and desert lavender contain cineole (2,21) that would help control the pain that is often associated with heavy menstruation.

***Ephedra* sp. for Urinary Tract Infections**

Urinary tract infections, especially bladder infections, are common in women and affect 20% of women at some time during their lives. Many women have recurrent infections. The Chumash made a tea from *Ephedra* and corn silk to increase urination and treat these infections (2,22). *Ephedra viridis* (Fig. 4) and *E. californica* are found in Chumash territory and may have been used for this purpose. These species of *Ephedra* contain no ephedrine, only pseudoephedrine (2), which can increase heart rate, blood pressure and urination. Corn silk was a traded commodity with the Cahuilla and other Indians who grew corn in carefully irrigated plots. It is well known to increase urination, decrease sodium excretion and raise urine pH levels (23,24), possibly helping to clear bacteria from the bladder and urethra.

Other California Indians used *Equisetum laevigatum* aerial parts (Costanoan and Achomawi), *Hemizonia congesta* unspecified plant parts (Maidu), *Madia elegans* unspecified plant parts (Maidu), *Marah* unspecified species and unspecified plant parts (Mendocino), or *Mimulus aurantiacus* flowers, stems and leaves (Costanoan) to control bladder infections (10). *Marah* plants are toxic, have produced many poisonings, and contain ribosome inactivating proteins and lectins that are still active in many different preparations (2). *Mimulus* plants contain several flavonoids (25) that may be helpful against bladder infections. *Madia* and *Hemizonia* plants have similar chemistry and contain flavonoids and labdane diterpenes (26–29) that may yield the same benefits.



Figure 4. *Ephedra viridis* used for urinary tract infections.

Flavonoid-containing Iris and Aromatherapy Ease the Pain of Parturition

Childbirth sometimes occurred in a special hut (1) and a midwife was usually available to assist in the process. However, if the woman was not near the village at the induction of labor, she gave birth wherever she found herself. After giving birth, the woman bathed herself in cold water (1). There were restrictions placed on the woman and her husband following birth, such as the husband could not touch his wife until the baby could stand on its feet by itself (1).

Aromatherapy was, and still is, used by some midwives to soothe the mother during labor. Mugwort leaves were crushed and rubbed between the hands of the midwife in order to bring out the pleasant smell of the plant (2). ‘Mugwort is dream sage. I rub it before I touch a woman in childbirth. It is the essence of dreams for the mother and child, when I bring life forward. I use it so that their dreams will come true’ (Cecilia Garcia, Chumash).

A number of different preparations were used by California Indians to facilitate birth and ease labor pains (10). *Iris* sp. root was used by Pomo people to accelerate the birthing process. *Iris* contains many flavonoids, benzoquinones and triterpenes (2) that may be of use in childbirth. Recent research has raised the possibility that some flavonoids may enhance the anxiolytic and sedative properties of diazepam (30). If flavonoids enhance the anxiolytic and sedative properties of natural agonists of the benzodiazepine receptor, this could be a benefit to the birthing process. *Lotus humistratus* aerial parts were soaked in water to make a decoction that was used to bathe a woman in labor, to facilitate birth (Karok), and to bathe a Maidu woman after giving birth. *Lotus* plants contain flavonoids (31) that could be as beneficial as iris root. *Sedum spathulifolium* stalks were made into a decoction and drunk by Maidu women to facilitate childbirth. *Sedum* plants contain a variety of alkaloids (32) and flavonoids (33) that may be helpful in childbirth. Maidu women chewed the root of *Viola* sp. to ease labor pains. *Viola* plants contain flavonoids and salicylic acid (34) that may be useful in childbirth. Karok

people rubbed the pulverized bark of *Quercus garryana* on the belly of a pregnant woman. It is not known if this facilitated birth, treated stretch marks or had some other use.

Passage of the afterbirth was induced with other preparations (10). *Trichostema lanatum* and *Trichostema lanceolatum* leaves were prepared as a decoction that Chumash women drank to facilitate passage of the afterbirth. This decoction was also used as a douche after giving birth (2). *Trichostema* plants are very aromatic and contain many monoterpenes (2), some of which may relieve pain. Cahuilla women drank an infusion of *S. apiana* roots to facilitate passage of the afterbirth and promote healing (10). The pain relieving capacity of white sage has been discussed above.

Carrizo cane, *Leymus condensatus*, was a critical component of childbirth. The umbilical cord was cut only with a knife made from carrizo cane (1). This practice occurred among Chumash, Kawaiisu, Monache and Yokuts people (1,10). It was believed that any knife other than a carrizo cane knife would make the baby sick. The umbilical cord was tied with string after cutting (1). Healing of the navel was another important aspect of birth. Among the Chumash, tule, *Scirpus acutus* ashes were applied to the newborn's navel (11). Ash is sterile and can stop bleeding. The pulverized bark of *Quercus lobata* was put on the umbilical cord of a newborn by Miwok people (10). The Washo people placed a poultice of pounded, fresh *Lomatium* sp. root on the baby's umbilical cord (10).

The mother was treated with various preparations after giving birth in order to help her function as a mother (10). *Senecio flaccidus*, groundsel, was made into an infusion that was given to Kawaiisu women after childbirth, although it was recognized as a toxic plant. The toxicity of *Senecio* plants makes their use questionable. Karok women drank a decoction of *U. californica* leaves to ease post childbirth pain. *Epilobium canum*, California fuchsia, decoction was used by Miwok and Maidu women after childbirth to promote healing and prevent hemorrhage. *Epilobium* preparations can be anti-inflammatory (35) and contain many flavonoids and polyphenols (36).

The Sap from *Vitis californica* to Enhance Lactation and California Poppy to Stop the Flow

A new mother experiencing inadequate milk flow used the sap from *V. californica* to induce the milk flow more smoothly (10). It was the practice of Wintu women to rub the sap from grape leaves on their breasts for this purpose. This sap was also used as a contraceptive as discussed below. Grapes contain many polyphenols and flavonoids but it is not known what compounds in grape leaf sap might increase milk flow. *Eschscholzia californica*, California poppy, was used by Mendocino, Pomo, Yuki and Kashaya women to decrease and stop milk production (10). The Pomo referred to the plant as 'milk disappear plant'. The usual procedure for stopping milk production was to mash the seed pods and rub this on the



Figure 5. *Rosa californica* used in infant care.

mother's breasts. It is not known what compound in the plant may decrease milk production. Benzophenanthridine alkaloids are present in the plant (2). It could be that the bitter flavor of the preparations discouraged infants from suckling, which decreased milk production.

Aromatherapy Extensively Used in Childcare

Rosa californica (Fig. 5) was used extensively by Chumash for infant and childcare (1,2). Rose petals were dried and crushed into powder that was used as baby powder. A decoction of fresh rose petals was rubbed on the gums of teething babies or babies suffering from colic to soothe them. Rose petals are fragrant and sweet tasting. This aromatherapy was extensively used in childcare and rose petals contain many fragrant monoterpenes that are the basis of the perfume industry (2).

Absorbent material that served as infant napkins (diapers) were made from *S. acutus*, tule (10). The dried stalks were shredded to make an absorbent material that lined deerskin pants. Other absorbent materials that were used like tule as infant napkins were *Juniperus* sp. shredded inner bark and *P. tridentata* shredded bark (10).

Chumash women relied on, and still rely on, mugwort tea to treat hot flashes and other menopausal symptoms (2). The tea is described under premenstrual syndrome. Women drank the tea as needed. Their husbands were also encouraged to drink the tea, since menopause was a time that was difficult for them as well. It is a pleasant, soothing tea.

Yerba mansa, a Popular Remedy for all Venereal Diseases

Venereal diseases appear to have been present in California prior to the arrival of Europeans. However, these diseases increased dramatically when the Indians lived in the large, Mission communities established by the Spanish. Gonorrhea appears to have greatly decreased the fertility of young women in the Missions. This decrease in fertility was a prominent factor in decreasing the overall population of California Indians (37).



Figure 6. *Anemopsis californica* used against sexually transmitted diseases.

Anemopsis californica, yerba mansa, (Fig. 6) was a popular remedy for all venereal diseases (11). It was regarded as a cure for venereal diseases among the Chumash people. It was even used during Mission times to treat venereal diseases (38), but did not prevent the decrease in fertility caused by gonorrhea. *Yerba mansa* has not been adequately studied to find the active components of the plant. It contains 4-allylveratrole, esdragol, thymolmethylether, linalool, para-cymene, 1,8-cineol, d-limonene, camphene, alpha- and beta-pinene (39,40). Sores from venereal diseases were treated with sea water (1), perhaps by bathing in it. Another preparation used by Chumash Indians for venereal diseases was a tea made from carrizo cane, *L. condensatus*, new shoots (6). Plants of the *Leymus* genus contain anthocyanins (41). It is not known which compound in the plant is effective against venereal disease. The Shoshone people drank a tea made from *Arenaria congesta* (sandwort) and *Ephedra* sp. to treat gonorrhea (42). *Ephedra* has already been discussed above. The chemistry of *Arenaria* plants has yet to be reported. Other Shoshone remedies for venereal diseases include *Erigeron concinnus*, *Cucurbita foetidissima*, *Thalictrum* sp. and *Ipomopsis aggregata* (42). *Erigeron* plant extracts have antimicrobial activity (43) and contain flavonoids (44), diterpenes (45), sesquiterpenes (45) and other compounds. *Cucurbita* plants contain saponins and cucurbitacins (2) that can be toxic in large doses and may be of interest in the treatment of venereal diseases. Although *Thalictrum* plants contain many phenols, terpenoids and other compounds, it is the protoberberine alkaloids (46) they contain that appear to be potent agents useful against bacteria, malaria, viruses and venereal diseases (47,48). *Ipomopsis* plants contain flavonols (49) and monoterpenes (50) that may facilitate the treatment of venereal diseases.

Pictographs and Rock Powder Play Roles in Fertility

Fertility became a major concern during and shortly after Mission times due to the decrease in birth rate. Pictographs were used in the treatment of fertility problems as discussed previously (51). Pictographs may have been used to educate

the couple about the importance of the uterus in fertility. They were also used to relax the couple.

Pomo people, and perhaps the Chumash, used rock powder to enhance fertility (1). This involved pecking small amounts of powder from a large rock, leaving small cupules on the rock. The powder was ground into a fine powder and inserted, by the husband, into the wife prior to intercourse. The active ingredients in rock powder that increase fertility are not known.

Wiyot girls were not allowed to touch *Gnaphalium* plants (10). It was believed that they would become pregnant if they touched the plant. This implies either that the plant increases fertility or desire. *Gnaphalium* plants contain chalcone isoflavonoids (52) that are phytoestrogens (53) and may affect fertility. Pregnant Wintun women chewed beargrass, *Xerophyllum tenax*, in order to ensure the birth of a strong baby boy (10). Beargrass contains plant steroids known as ecdysones (54) that may have some role in fertility.

The Role of Herbs in Family Planning

Chumash people used abstinence as their primary means of contraception (1). The population of the village was closely regulated in order to maintain a size that could be fed and cared for. Certain rules were closely followed, such as the husband could not touch his wife until their new baby could walk on its own. These rules were meant to maintain the proper size of the village. Chumash people also used contraceptives such as a decoction of *Phoradendron macrophyllum*, big leaf mistletoe (11). *Phoradendron* plants contain toxic compounds including lectins (55), phoratoxins (56), ligatoxin B (57), moronic acid and toxic triterpenes (58). Despite the presence of these toxic compounds, *Phoradendron* species have never been reported to produce serious toxicity or death (59).

Other California Indians used preparations of *Pinus monophylla* cooked resin, *Smilacina stellata* leaf tea and *Veratrum californicum* root decoction to make contraceptives (10). The resin from *P. monophylla* contains sesquiterpenes (60). Some sesquiterpenes, such as gossypol, are useful contraceptives (61). Nothing is reported concerning the compounds in *Smilacina* plants. *Veratrum californicum* is known to contain steroidal alkaloids that are teratogenic (62). The use of this plant by fertile women is discouraged. The sap from the leaves of *V. californicum* was used to relieve lust and excessive passion in women (10), perhaps a form of contraception.

Abortion was sometimes necessary to the village and the mother to be. For instance, in times of drought, when food was scarce, pregnancies were difficult to maintain. The mother had already earned her place in the village and had to survive. *Anemopsis californica* and tobacco, *Nicotiana quadrivalvis*, were used to correct pregnancies, or in other words to induce abortions (2). *Nicotiana* plants contain nicotine, anabasine and similar alkaloids (2,63). These alkaloids induce vomiting, can cause respiratory paralysis, death (2,63) and (in cows) fetal defects (64). It is not known how these plants were used together to induce abortion. Other plants may have been used to induce abortion by other California Indians, such as mugwort (10),

Ephedra sp. (10), *Equisetum* sp. (10), *Phoradendron* sp. (10), *Sisyrinchium* sp. (10), and the combination of *Satureja douglasii* and an unidentified sage (1). It is not known which compound in mugwort, *Equisetum*, *Phoradendron* or *Sisyrinchium* may be toxic to fetuses. The use of *Ephedra* for abortions is dangerous due to the ability of the plant to increase blood pressure in the mother. *Satureja* plants contain flavonoids and other compounds that are cytotoxic and may be active in abortions (2). The authors know of no plant product that produces a safe abortion. The usual rule is that the dose of the plant that kills the fetus also kills the mother.

Conclusion

Women were the basis of Chumash village life. They were responsible for the health of their families and cared for and nurtured their children, husbands, parents and relatives and possessed knowledge of many plant medicines, healing techniques and therapeutic procedures. Plants were, and still are, widely used for a number of conditions affecting women in California. For centuries, California Indians have derived great benefit from these plants, many of which are now neglected and should be brought back into our everyday health care. This article teaches about the historical use of many California plants and how they can be safely used for women's health. By providing the specific uses of plants for specific diseases and discussing chemistry, efficacy and safety concerns for each plant, information often missing in articles on plants for women's health, we hope that this article will give direction to women seeking to use plants in their health care.

This is not an anthropological study of plant use since such studies frequently fail to humanize the people who use the plants, by inference making their health care practices seem foreign and unusual. In contrast, we wish to show the relevance of these traditional uses for the health of women today. During the course of writing this article and other works, the authors have been surprised at the paucity of information on many medically important California plants. It is our hope that along with introducing plants into women's health care, this study will be a catalyst to more basic studies to elucidate the mechanisms of these fascinating plants.

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